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10/540,638

06/23/2005

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EXAMINER

VELASQUEZ, VANESSA T

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

03/20/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/540,638 | Applicant(s) YAMAKOSHI, YASUHIRO | |
| | Examiner Vanessa Velasquez | Art Unit 1793 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,12-17,19,21-24,29 and 30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,12-17,19,21-24,29 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

Claims 3-11, 18, 20, and 25-28 are canceled. Claims 1, 2, 12-17, 19, 21-24, 29, and 30 are pending and presented for examination on the merits.

Claim Interpretation

The Examiner acknowledges the use of the transitional phrase "consisting of" in independent claims 1, 2, and 13. The phrase will be interpreted per the guidelines in MPEP § 2111.03.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1, 2, 12-17, 19, and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goyal et al. (US 5,964,966) in view of Shindo et al. (US 6,485,542).

Regarding claims 1, 2, 12, 13, 19, and 21, Goyal et al. teach a substrate comprising nickel and at most 15 atomic percent of a Group VB metal (col. 10, lines 17-21). The Group VB metal may be tantalum (col. 12, lines 22-25). The overlap between the ranges of the prior art and the claimed ranges is sufficient to establish a *prima facie* case of obviousness (MPEP § 2144.05 Section I).

In addition, Goyal et al. teach that some alloy compositions taught therein may be deposited by sputtering without destroying the essence of the invention (col. 12, lines 36-38, 48-51, 59-61). Because the films of the some of the alloys are themselves produced from a sputter deposition technique, it would have been obvious to one of ordinary skill in the art to have formed those same alloys into sputtering targets for the purpose of depositing those alloys onto other substrates.

With regard to the phrase "for gate electrode," the phrase is intended use and will not be accorded patentable weight.

Still regarding claims 1, 2, 12, 13, 19, and 21, Goyal et al. are silent as to the impurity contents of the nickel-based alloys taught therein.

U.S. Patent No. 6,485,542 issued to Shindo et al. is drawn to a sputtering target containing mainly nickel with iron and optionally elements such as Co, Cr, Rh, Nb, and Ta (col. 2, lines 33-38). In Shindo et al., great care is taken to minimize impurities in order to prevent weakening of the ability of the sputtering target to resist corrosion, to decrease the formation of particles during sputtering, and to maintain and/or enhance the magnetic properties of the target (col. 1, lines 52-57; col. 2, lines 42-45, 60-63). More specifically, the total metal impurities (non-gaseous impurities) should be at most 50 ppm (col. 1, lines 66-67 to col. 2, line 1), which overlap the claimed range. Gaseous impurities, which also overlap the claimed ranges, are limited to the following amounts (col. 2, lines 50-59):

| | |
|--------|-----------------------|
| Oxygen | ≤ 10 ppm (preferable) |
|--------|-----------------------|

| | |
|----------|----------------------|
| Nitrogen | ≤ 1 ppm (preferable) |
|----------|----------------------|

Art Unit: 1793

Hydrogen ≤ 0.5 ppm (preferable)

Carbon ≤ 10 ppm (preferable)

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to minimize the levels of impurities in the nickel-tantalum substrate of Goyal et al. to the levels taught by Shindo et al. because these purity levels would improve the corrosion resistance of the nickel alloy of Goyal et al., form fewer particles upon sputtering, and further enhance magnetic properties (Shindo et al., col. 2, lines 60-63).

Regarding claims 15, 16, 22, and 23, Goyal et al. is silent as to the magnetic permeability of the nickel alloy. However, it has been established that when the compositions of two products are identical or substantially identical, the two products are also expected to possess the same properties (MPEP § 2112.01 Section I). In the instant case, the substrate in Goyal et al. has a composition that encompasses the claimed ranges. Therefore, properties such as magnetic permeability would be expected to be same in both the claimed product and the product of Goyal et al.

Regarding claims 17 and 24, Goyal et al. teach that the grain size is less than 1000 microns, and more preferably less than 5 microns (col. 11, lines 37-41), which encompasses the claimed range.

3. Claims 1, 2, 12-17, 19, and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goyal et al. (US 5,964,966) in view of Shindo et al. (US 7,435,325, which is the English equivalent of WO 03/014421 A1, published before the filing date of the instant application).

Art Unit: 1793

Regarding claims 1, 2, 12-14, 19, 21, 29, and 30, Goyal et al. teach a substrate comprising nickel and at most 15 atomic percent of a Group VB metal (col. 10, lines 17-21). The Group VB metal may be tantalum (col. 12, lines 22-25). The overlap between the ranges of the prior art and the claimed ranges is sufficient to establish a *prima facie* case of obviousness (MPEP § 2144.05 Section I).

In addition, Goyal et al. teach that some alloy compositions taught therein may be deposited by sputtering without destroying the essence of the invention (col. 12, lines 36-38, 48-51, 59-61). Because the films of the some of the alloys are themselves produced from a sputter deposition technique, it would have been obvious to one of ordinary skill in the art to have formed those same alloys into sputtering targets for the purpose of depositing those alloys onto other substrates.

With regard to the phrase "for gate electrode," the phrase is intended use and will not be accorded patentable weight.

Still regarding claims 1, 2, 12-14, 19, 21, 29, and 30, Goyal et al. are silent as to the impurity contents of the nickel-based alloys taught therein.

U.S. Patent No. 7,435,325 issued to Shindo et al. is drawn to a method of refining nickel for use in a high-purity nickel sputtering target. Shindo et al. teach that gaseous, non-metallic, and metallic elements other than nickel negatively affect the quality of films deposited from a nickel substrate (col. 2, lines 25-33). Some of these negative effects include decreasing the quality of the MOS-LSI interface and bonding ability at the interface, producing soft errors that result from the emission of alpha rays, and increasing the chances of particle formation during sputtering (col. 1, lines 25-33).

Art Unit: 1793

To suppress these effects, Shindo et al. has developed a method that produces high-purity nickel having non-gaseous impurity levels as follows in wtpm (Table 1, Example 2):

| Impurity | US 7,435,325 |
|----------|--------------|
| Fe | 1 |
| C | < 10 |
| S | < 10 |
| P | < 10 |

The gaseous impurities are as follows in wtpm (Table 1, Example 2):

| Impurity | US 7,435,325 |
|----------|--------------|
| O | < 10 |
| N | < 10 |
| S | < 10 |
| F | < 10 |
| H | < 10 |

It is noted that these ranges overlap those of the claimed invention. Due to the negative effects of these impurities, it would have been obvious to one of ordinary skill in the art to have purified the nickel of Goyal et al. before alloying with tantalum to achieve the impurity levels taught by Shindo et al. for the purpose of producing an improved nickel base sputtering target.

Regarding claims 15, 16, 22, and 23, Goyal et al. is silent as to the magnetic permeability of the nickel alloy. However, it has been established that when the compositions of two products are identical or substantially identical, the two products are also expected to possess the same properties (MPEP § 2112.01 Section I). In the instant case, the substrate in Goyal et al. has a composition that encompasses the

Art Unit: 1793

claimed ranges. Therefore, properties such as magnetic permeability would be expected to be same in both the claimed product and the product of Goyal et al.

Regarding claims 17 and 24, Goyal et al. teach that the grain size is less than 1000 microns, and more preferably less than 5 microns (col. 11, lines 37-41), which encompasses the claimed range.

Response to Arguments

Applicant's arguments filed December 18, 2008 have been fully considered but they are not persuasive.

First, Applicant argues that Goyal et al. "teach-away from a Ni-Ta sputtering target because Goyal et al. teaches to one of ordinary skill in the art that a Ni-Ta substrate **should be** produced via rolling and annealing" (emphasis added). In response, Goyal et al. teach that some alloys "can be" rolled and annealed (col. 12, line 26). "Can be" does not imply that something is requisite as does the suggestive phrase "should be." One of ordinary skill in the art would appreciate that there are other suitable methods (e.g., sputtering (col. 12, lines 31-63)) that would still allow one to form the nickel alloy composition without destroying the intended properties attributed to the invention of the prior art. Thus, since some of the alloys are themselves produced from a sputter deposition technique, it would have been obvious to one of ordinary skill in the art to have formed those same alloys into sputtering targets for the purpose of depositing those alloys onto other substrates. In addition, it appears that the Applicant is attributing the process by which something is made to how it can be used.

Art Unit: 1793

Specifically, Applicant implies that the fact that an alloy is rolled and annealed excludes it from being used as a sputtering target. There are multiple methods of manufacturing sputtering targets, so it cannot be concluded that because the alloy is formed by sputtering that the alloy itself cannot be formed into a sputtering target.

Second, Applicant alleges that Goyal et al. and Shindo et al. are not combinable because applying the purification process of Shindo et al. to the alloy of Goyal et al. would not result in the same purity taught by Shindo et al. In response, Applicant has not provided any objective evidence to support the above allegation. It is noted that Applicant has pointed out that the mere difference in the process of Shindo et al. and the present invention is sufficient to prove that the claimed purity levels cannot be reached by the process of Shindo et al. In response, it is generally known to the skilled artisan that there are may be a variety of ways to arrive at the same result. Thus, the mere difference between the processes would not be adequate to overcome the rejection.

Third, Applicant asserts that Goyal et al. and Shindo et al. teach away from each other. Applicant specifically asserts that the general state of the art teaches away from magnetic materials. In response, the paragraph that is cited by Applicant (col. 4, lines 46-50) is teaching that pure nickel is undesirable. Note that neither the invention of Goyal et al. nor the claimed invention is drawn to pure nickel, but rather, nickel alloy. Therefore, the argument is not applicable to the invention of Goyal et al. or the present invention.

Fourth, Applicant argues that the nickel alloy of Goyal et al. would not possess the claimed properties. In response, it has been established that when the compositions of two products are identical or substantially identical, the two products are also expected to possess the same properties (MPEP § 2112.01 Section I). If it is otherwise true, Applicant may supply objective evidence showing that the properties would differ between products of the same composition.

Conclusion

4. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vanessa Velasquez whose telephone number is 571-

Art Unit: 1793

270-3587. The examiner can normally be reached on Monday-Friday 9:00 AM-6:00 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached at 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Roy King/
Supervisory Patent Examiner, Art
Unit 1793

/Vanessa Velasquez/
Examiner, Art Unit 1793

Application/Control Number: 10/540,638
Art Unit: 1793

Page 11